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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,990	02/18/2004	Stanley Loren Bentley	6890-74183	3319

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EXAMINER	
LIN, SUN J	

ART UNIT	PAPER NUMBER
2825	

DATE MAILED: 07/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/780,990	BENTLEY ET AL.	
	Examiner	Art Unit	
	Sun J. Lin	2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 May 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-52* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to applicants' Amendment and Remarks filed on 05/08/2006 regarding application 10/780,990 filed on 02/18/2004. Claims 1 – 52 remain pending in the application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

(1). Determining the scope and contents of the prior art.
(2). Ascertaining the differences between the prior art and the claims at issue.
(3). Resolving the level of ordinary skill in the pertinent art.
(4). Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1 – 18, 20 – 29 and 31 – 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0072956 A1 to *Willems et al.* over "*CALS 2 Technical Goat* "(1997) published by *Swedish Defense Material Administration* (called *SDMA* hereinafter) in view of "*New Models to Speed the Development of Electronics Components*" (1999) published by *PREAMP CONSORTIUM* (*JOINT VENTURE*) (called *PCJV* hereinafter).

4. As to Claim 31, *Willems et al.* show and teach the following subject matter:

- A method of designing a (printed) circuit board – [Fig. 2; Figs. 12 –17; Fig. 22; Paragraph 0202];
- *data entry device* and/or *pointing device* of a *client machine* – [Fig. 24; Fig. 18; Fig. 19]; Network can be viewed as a supply chain – [Paragraph 0011]; circuit board design – [Paragraph 0619]; choosing part of current circuit board

to minimize circuit board cost – [Paragraph 0612]; Notice that a user-supplied circuit board design data (e.g., parts, components of circuit board) can be received from the *data entry device* and/or *pointing device*, and forwarded to a supply chain;

- retrieving *circuit board manufacturing cost data* regarding the (printed) circuit board design under study from a *manufacturing cost database* – [Paragraph 0464];
- *(User interface) application display* on the client machine in a network – [Fig. 20 – 34]; Displaying the manufacturing cost data on the (user interface) application display on the client machine – [Fig. 28]; Notice that after retrieving new circuit board manufacturing cost data received from the server machine, the value of the manufacturing cost data shown on the application display is updated.

Willems et al. does not teach a method of transmitting a *user interface application* from a server machine to a client machine via a publicly-*accessible-global network* (e.g., *Internet*). But *SDMA* discloses a scheme of *sharing and exchange manufacturing data* (e.g., manufacturing cost data and/or manufacturing capability data), which allows *multiple users* to access all parts of necessary information set *in real time* (sharing) or transfer it *from a remote location* (e.g., a *server machine*) to their own location or *vice versa (exchange)* – [**Sharing and exchange**: Page 51]. *SDMA* also discloses the following subject matter:

- **STEP** (**ST**andard for **E**xchange of **P**roduct Model Data) – for exchange of product information – [Page 81]; Notice that, in the **STEP** group, the product (manufacturing) information is exchanged between a client machine and a server machine;
- Databases – for reliable *long term storage* of *very large amount of (product) information* (e.g., manufacturing cost data and/or manufacturing capability data) – [Page 81];
- Application interfaces at client machines and a server machine – [Fig. 18].

It is well-known in the arts that a *user interface application* is transmitted from a server machine through the Internet, and it can be downloaded on a client machine by a

user. Notice that the product manufacturing information (e.g., manufacturing cost data) is retrieved from a database in a server machine in order to share the existing product manufacturing information with a user/designer thereby *reducing development time and cost in manufacturing electronic components/devices* (e.g., circuit boards).

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have applied the teachings of *SDMA* in transmitting a *user interface application* from a server machine to a client machine via a publicly-accessible-global network (e.g., Internet), to allow a client/user to retrieve the existing circuit board manufacturing cost data from a circuit board manufacturing cost database in a server machine in order to reduce development time and cost in manufacturing a circuit board.

Willems et al. teach retrieving circuit board manufacturing cost data from a manufacturing cost database, and *SDMA* discloses the STEP scheme for exchanging product manufacturing information between a client machine and a server machine. *Willems et al.* and *SDMA* does not explicitly disclose retrieving *circuit board manufacturing capability data* from a (manufacturing capability) database. But *PCJV* teach (1) utilizing STEP Tools for *sharing design and manufacturing information*, and retrieving *circuit board manufacturing capability data* from a manufacturing capability database *in order to reducing time-to-market and development costs* in developing and manufacturing a (printed) circuit board (2) using *STEP data application interface* for utilizing the STEP Tools (3) STEP is an international standard that defines standard product model for automation systems in order to facilitate the *capture and use of all information (e.g., PCB manufacturing cost data and/or PCB manufacturing capability data) relevant to product design and manufacture*.

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have applied the teachings of *PCJV* in utilizing *STEP application interface* *in use of STEP Tools for sharing design and manufacturing information, and retrieving circuit board manufacturing capability data from a manufacturing capability database in order to reducing time-to-market and development costs in developing and manufacturing a (printed) circuit board.*

Notice that the *STEP data application interface* can update the user interface application on the client machine based captured circuit board manufacturing cost data and/or the circuit board manufacturing capability data received from the server machine via the Internet.

For reference purposes, the explanations given above in response to Claim 31 are called **[Response A]** hereinafter.

5. As to Claims 1, 20 and 50, reasons are included in **[Response A]** given above.

6. As to Claims 2, 3, 21, 22, 32, 33 and 51, reasons are included in **[Response A]** given above. It is well-known that the user interface application is transmitted from the server machine via the Internet, and is to be downloaded the client machine in response to a user-supplied (download) request.

7. As to Claims 4 and 23, reasons are included in **[Response A]** given above. Notice that a manufacturing capability database and the user interface application associated with user-supplied circuit board design are transmitted from the server machine to the client machine via the Internet, which is a publicly-accessible global network.

8. As to Claim 34, reasons are included in **[Response A]** given above.

9. As to Claims 5, 6, 24, 25, 35 and 36, as explained in **[Response A]** given above, the user-supplied circuit board design data is received by the client machine via a data entry device (i.e., input device). Since SDMA discloses in Fig. 18 that there is a one-to-one correspondence of application interface in a client machine and the server machine, the user-supplied circuit board design data is received by the server machine via the Internet.

10. As to Claims 8, 9, 38 and 39, reasons are included in **[Response A]** given above.

11. As to Claims 27, 28 and 52, reasons are included in **[Response A]** given above.

12. As to Claims 10, 41 and 42, reasons are included in **[Response A]** given above.

13. As to Claims 11, 12, 29 and 43, in the STEP, the circuit board manufacturing capability database is a *long term storage*, which supplies reliable up-to-date board manufacturing capability data to all client machine in the STEP Tools model; data in the user interface application is updated whenever a "update" bottom is push and/or a new board manufacturing capability data is available. It is a standard that whenever a data in the user interface application is changed (i.e., updated), a *traffic light image* (e.g., an indication marker which blinking and/or changing color) is displaced on the screen.

14. As to Claims 13 – 16, *Willems et al.* teach that a supply chain (i.e., work center) is selected based on its product's *unit manufacturing cost* (UMC), which is defined as the *per unit cost* (i.e., per-circuit-board manufacturing cost value) of a completed finished good item (i.e., circuit board)...overhead costs (i.e., setup cost value) ...process engineering costs & processing costs (i.e., run cost value) – [Paragraph 0008]. Notice that the overhead costs (setup cost value) and process engineering costs & processing costs (run cost value) of a circuit board are different for different work center (i.e., supply chain) of a circuit board manufacturing process.

In order to select a low cost supply chain, the UMC (per-unit-board manufacturing cost value) should be updated and displayed for a user – [page 25, Paragraph 0397, Table 12].

For reference purposes, the explanations given above in response to Claims 13 – 16 are called **[Response B]** hereinafter.

15. As to Claims 17, 18, 48 and 49, reasons are included in **[Response B]** given above. Notice that the process engineering costs & processing costs include tooling cost value.

16. As to Claims 44 – 47, reasons are included in **[Response B]** given above.

17. As to Claims 7, 26, 37 and 40, in addition to reasons included in **[Response A]** given above, *Willems et al.* teach equipped database in computer system in both client machines and the server machine – [Fig. 18; Fig. 20]. It is inherent that the circuit board manufacturing cost data and/or circuit board manufacturing capability data retrieved from the server machine can be stored in the database equipped in the client machine for future retrieval.

18. Claims 19 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0072956 A1 to *Willems et al.* and "*CALS 2 Technical Goat* "(1997) published by *SDMA* and "*New Models to Speed the Development of Electronics Components*" (1999) *PCJV* in view of U.S. Patent No. 6,496,957 to Kumagai.

19. As to Claims 19 and 30, *Willems et al.*, *SDMA* and *PCJV* show and teach all subject matter recited in Claims 1 and 20; they do not disclose steps of retrieving a circuit board design image based on a user selected-portion of the user interface application and displaying the circuit board image on the client machine to a user. But *Kumagai* shows in Fig. 1 and teaches determining a user selection-portion of circuit board design using a CAD tool, retrieving a circuit board design image based on the user selected-portion and displaying the circuit board design image on the client machine to a user, which is well-known utilized in the manufacturing and/or supply chain in order to efficiently and accurately retrieve cost and/or capability/availability information from a server machine through the Internet.

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have applied the teachings of *Kumagai* in determining a user selection-portion of circuit board design based on a user interface application and retrieving a circuit board design image based on the user selected-portion on the user interface application and displaying the circuit board design image on the client machine in order to efficiently and accurately retrieve cost and/or capability information from a server machine through the Internet.

Response to Amendment and Remarks

20. Applicants' arguments filed on 05/08/2006 have been fully considered but they are not persuasive. Key arguments and their response related to the claims are listed as below:

[Argument 1]: A user of the system in *Willems* et al. (Prior art) is simply unable to supply design data to the system of Willems et al. because such design data would be used by the external vendor to determine and supply the total cost and not by the system and methods disclosed in Willems et al.

[Response 1]: Please see [Response A] given above for details. Notice that computer system is a client machine, and Network is a supply chain. A user can provide a circuit board design to supply chain for information (e.g., cost, manufacturability etc.).

[Argument 2]: Willems et al. (Prior art) doest not teach a method of transmitting a user interface application from a server machine to a client machine via a publicly-accessible-global-network (e.g., Internet).

[Response 2]: Downloading a user interface application from a server machine (at supply chain) to a "**licensed**" (i.e., paid fee) client machine via Internet is well known in the art. In order to communicate with a supply chain to reduce development time and cost in manufacturing a circuit board, a user interface application is necessary. Notice SDMA (prior art) discloses very detailed concept of design information sharing using Internet as explained in the Office Action given above.

[Argument 3]: Prior art doest not teach subject matter regarding "for sharing design and manufacturing information and retrieving circuit board manufacturing capability data from a manufacturing capability database in order to reducing time-to-market and development cost in developing and manufacturing a (print) circuit board

[Response 3]: PCJV (prior art) teach this subject matter by using STEP Tools (please review PCJV prior art for details). Notice that SDMA also teach STEP concept as explained in the Office Action given above.

Conclusion

21. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to *Sun James Lin* whose telephone number is (571) 272 - 1899. The examiner can normally be reached on Monday-Friday (9:00AM-6:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, *Jack Chiang* can be reached on (571) 272 - 7483. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308 - 7382 for regular communications and (703) 305 - 3413 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 - 1782.

Sun James Lin
Primary Examiner
Art Unit 2825
July 21, 2006

SUN JAMES LIN
PRIMARY EXAMINER